

UNIVERSITI TEKNOLOGI MALAYSIA

INDUSTRIAL TRAINING REPORT

MD ABU SALEH NAYEEM (A19EC4012)

BACHELOR OF COMPUTER SCIENCE (SOFTWARE ENGINEERING)

4SECJ- 2022-23/1

COMPANY NAME:	WAVELET SOLUTION SDN BHD
TRAINING PLACE:	No. 24B, 2nd Floor Jalan USJ 10/1B, Jalan USJ 10/1a, Taipan Business Centre, 47620 Subang Jaya, Selangor
TRAINING PERIOD :	3 rd October 2022 – 28 th February
SUPERVISORS:	NORIZAN BINTI A KAMALUDEEN ASMAA AMMAR
SUPERVISORS:	NOR ERNE NAZIRA BINTI BAZIN
REPORT DATE :	10 th February 2022

ACKNOWLEDGEMENT

I preparation of this report, I would want to show my gratitude and appreciation to everyone who assisted me in writing this report, especially to my friends, Colleagues and family who worked hard to motivate me to finish my industrial training.

I also want to thank my company supervisor, Norizan Binti A Kamaludeen and Asmaa Ammar, for providing me with so many experiences throughout the industrial training programme, as well as my faculty supervisor, Nor Erne Nazira Binti Bazin, for assisting me in completing my industrial training. Last but not least, I would want to express my gratitude to the team leader and senior programmers for making every effort to lead the team to success.

ABSTRACT

Before entering the real world, students are given professional job experience and a workplace setting through industrial training programmes. Students can improve their professional abilities through industrial training, including communication, social, and practical skills. One semester's worth of this internship lasts 20 weeks. The Company chosen for the internship is WAVELET SOLUTIONS SDN BHD, located at Taipan Business Centre, Jalan USJ 10/1B, No. 24B, 47620 Subang Jaya, Selangor. Norizan Binti A Kamaludeen and Asmaa Ammar are my company supervisors, while Nor Erne Nazira Binti Bazin is my faculty supervisor. Along my internship training, the tasks or projects that were given are related to backend part of the BigLedger, ETL etc Projects. So the company developing the next generation product (known as BigLedger), based on multi-channel cloud native architecture, with scalability, cross platform, mobile, and REST-API. Serving as 'a brain' for a unified data warehouse / data lake for the business, BigLedger optimally takes advantage of various cloud services to transform the business landscape into the integrated federated system, giving an opportunity for significant competitive advantage over competitors. Preserving both the original data fidelity and the lineage of data transformation, BigLedger data lake platform serves as a highly-scalable and flexible base for data analytics processes. The implementation of this project required Java functional programming language for the back-end. This project required a good understanding on Java programming language to create the applets.

Table of Contents

ACKNOWLEDGEMENT.....	2
ABSTRACT.....	3
List of Figures	6
CHAPTER 1	7
INTRODUCTION.....	7
1.1 Introduction	7
1.2 Introduction of wavelet solution sdn bhd.	7
1.3 Faculty and Organization Supervisor	8
1.3.1 Faculty Supervisor Information.....	8
1.3.2 Company Supervisor Information	8
1.3.3 Company Supervisor Information	9
1.3.4 Student Information.....	9
1.4 Organisation structure	9
1.5 Gantt Chart	11
1.6 Conclusion.....	11
CHAPTER 2	12
SPECIFIC DETAILS ON PROJECT / TRAINING	12
2.1 Introduction	12
2.2 Objectives of Project / Training	12
2.3 Requirement Engineering	13
2.4 Creating Applets.....	13
2.4.1 Project Execution	14
2.4.1.1 Jira (Kanban)	16
2.4.1.2 IntelliJ Idea.....	18
2.4.1.3 DBeaver	20
2.4.1.4 PostgreSQL.....	21
2.4.1.5 Postman	22
2.4.1.6 Chrome Browser	22
2.4.2 Hardware Requirement for execution	23
2.7 Time period to complete the tasks	25
2.8 Theoretical and Practical Knowledge.....	26
2.9 Problem Faced During Practical	27
2.10 Program Management	28
2.11 Conclusion.....	28

CHAPTER 3	29
OVERALL INFORMATION OF INDUSTRIAL TRAINING	29
3.1 Introduction	29
3.2 Skills Improvement and Learning.....	29
3.3 Reference Materials.....	31
3.4 Constructive Comments.....	31
3.5 Conclusion.....	31
CHAPTER 4	32
CONCLUSION.....	32
4.1 Introduction	32
4.2 Overall Achievements	32
4.3 Problems and Executions.....	33
4.4 Opinion and Suggestions.....	33
4.5 Conclusion.....	34
REFERENCES.....	35
APPENDIX A.....	35
Industrial Training Achievements & Checklists.....	35
INDUSTRIAL TRAINING ACHIEVEMENTS.....	36
Approval.....	36
INDUSTRIAL TRAINING CHECKLISTS (PLACEMENT).....	37
APPENDIX B.....	38
Some of the projects	38

List of Figures

Figure 1: Wavelet Services	8
Figure 2: Full Organisation Structure.....	9
Figure 3: Software Development Team	10
Figure 4: Gantt Chart	11
Figure 5: Mock-up Created by the Product/Frontend team.....	13
Figure 6: Flowchart of the project execution	15
Figure 7: Issue Status “Analysis-Investigation” and “target end date”	16
Figure 8: Issue Status “In Progress”	17
Figure 9: Issue Status “Code Review” and the “Commits”	18
Figure 10: Bitbucket “Successful / failed” test.	18
Figure 11: local branch.	19
Figure 12: local Environment.	19
Figure 13: Unit Testing Configuration.....	20
Figure 14: DBeaver.	21
Figure 15: PostgreSQL.....	21
Figure 16: Postman.....	22
Figure 17: Applet in Cloud.....	23
Figure 18: Stoplight: API Design and Documentation.....	24
Figure 19: Code for Documentation.....	25
Figure 20 Types of issue	26
Figure 21: Start Date, Due Date and Target End Date.....	26
Figure 22: Clicknet website	38
Figure 23: Biolife website.....	38
Figure 24: OneLiving website.....	39
Figure 25: Applests	39

CHAPTER 1

INTRODUCTION

1.1 Introduction

In this chapter, we will delve into the background of the company, including its organizational structure and history. We will also provide information on the supervisors and student details, as well as a Gantt chart outlining the schedule for the industrial training period. This chapter will serve as a comprehensive overview of the company and the structure in which the industrial training will take place, providing important context for the student and supervisors involved.

1.2 Introduction of wavelet solution sdn bhd.

Wavelet Solutions Sdn. Bhd. was founded in October 2003 with the goal of becoming a leading provider of ERP solutions for small and medium-sized enterprises (SMEs). The company's core business revolves around the development, implementation, and marketing of its web-based and cloud ERP system, known as the Enterprise Management Portal (EMP). Over the years, Wavelet has expanded its reach beyond Malaysia, and it has gained recognition and clients in Hong Kong, Singapore, Thailand, and Brunei. EMP, being a cost-effective web-based software, has become a popular ERP system solution for businesses in various industries, including retail chain stores, trading, and distribution. The company's focus on providing tailored ERP solutions for SMEs, and its ability to cater to businesses in different industry verticals, has established Wavelet as a reliable and efficient solution provider.

Headquartered in Subang Jaya (Malaysia), along with the R&D laboratory in Bangsar, Wavelet Solutions has marked the August, 2011 by forming a Joint Venture with Chinese Academy of Sciences (SIAT), with the purpose of penetrating the China market and conducting a research in multi-agent framework – Artificial Intelligence (AI).

Three years ago, Wavelet Solution began developing its next generation product, known as BigLedger. This project is based on multi-channel cloud native architecture and features scalability, cross-platform compatibility, mobile functionality, and REST-API. BigLedger

serves as a central hub for a unified data warehouse/data lake for businesses and takes advantage of various cloud services to transform the business landscape into an integrated federated system, providing a significant competitive advantage over competitors. BigLedger preserves the original data fidelity and the lineage of data transformation, and it serves as a highly scalable and flexible base for data analytics processes. The Wavelet team is made up of around 100 developers from more than 15 countries. This diverse team has the capability to deliver the best solution for customers with their expertise in different technology stacks and experience in different business domains.

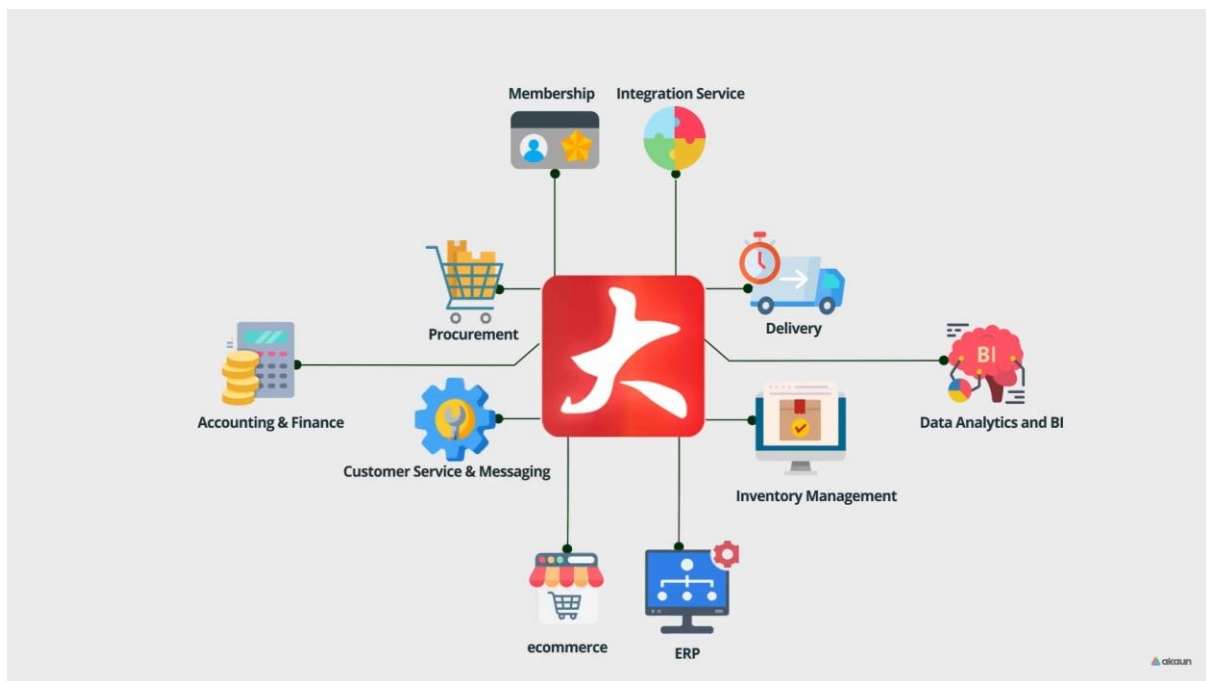


Figure 1: Wavelet Services

1.3 Faculty and Organization Supervisor

1.3.1 Faculty Supervisor Information

Name : Nor Erne Nazira Binti Bazin
 Phone : 075532077 / 016-4475496
 Email : erne@utm.my
 Position : Senior Lecturer

1.3.2 Company Supervisor Information

Name : Norizan A Kamaludeen

Phone : 016-2886496
Email : norizan@wavelet.net
Position : Technical Manager for development team
Date : 3rd October 2023 – 1st December 2023

1.3.3 Company Supervisor Information

Name : Asmaa Ammar
Phone : 016-2428644
Email : asmaa@wavelet.net
Position : ETL Manager | Team Leader
Date : 1st December 2023 – 28th February

1.3.4 Student Information

Name : Md Abu Saleh Nayeem
Matric No : A19EC4012
Course : Bachelor of Computer Science (Software Engineering)
Phone : 014-6909250
Email : abu.saleh@graduate.utm.my

1.4 Organisation structure

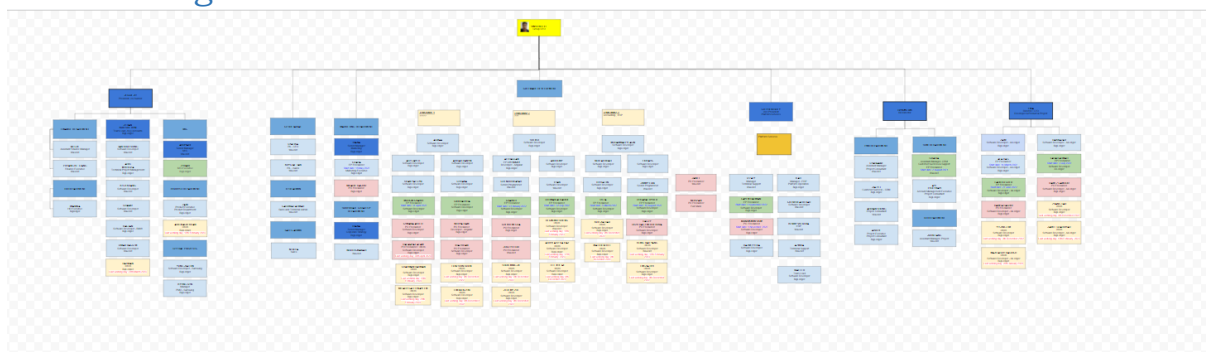


Figure 2: Full Organisation Structure

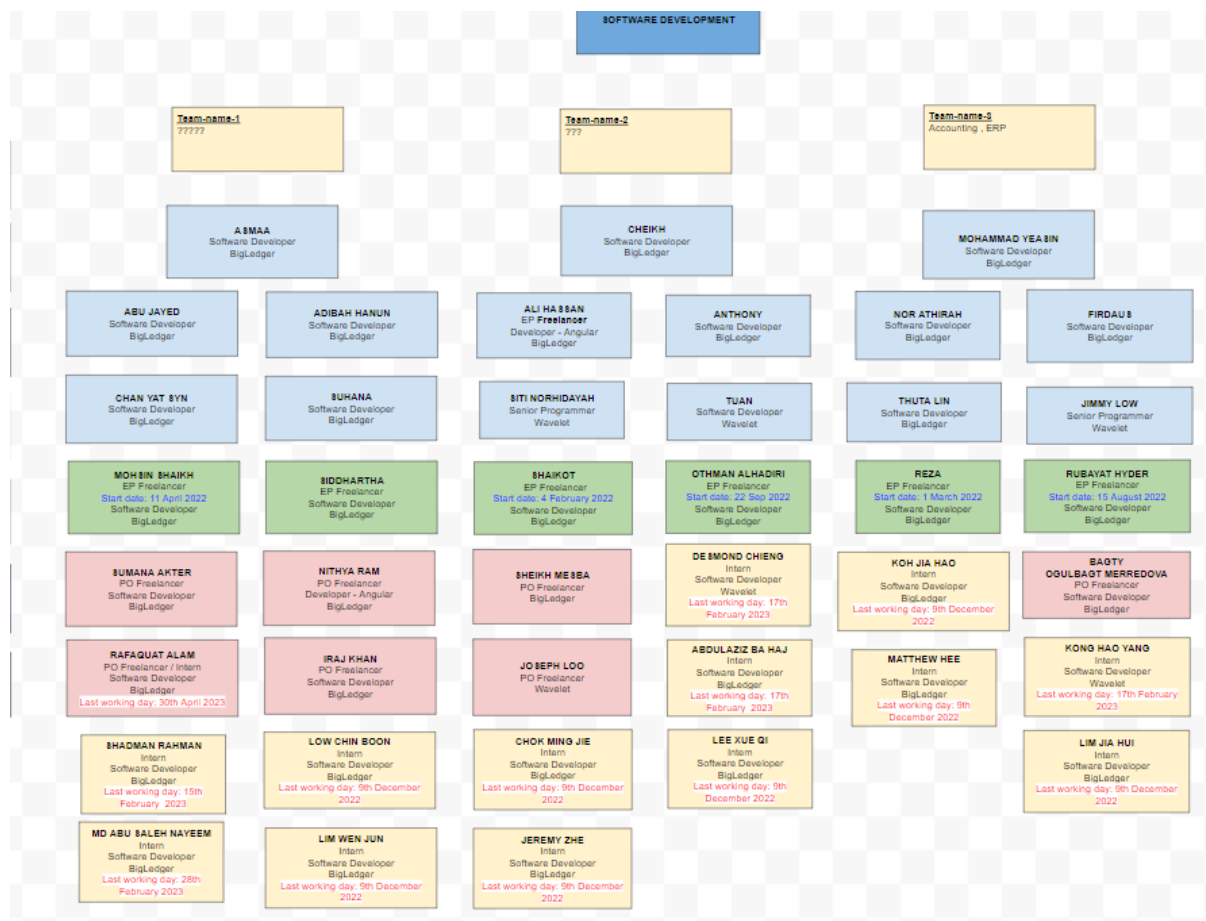


Figure 3: Software Development Team

Wavelet solutions are separated into multiple departments. Each department is in charge of carrying out its own operations. The department for industrial training placement is Back-End Java developer department. There are three groups for the developer. “Bug Busters” Is the name of my group where a senior back end developer named Asmaa Ammar is the leader of the groups. This company based on cloud where they create the applets and my work is to do the backend part of them. This department is responsible for the handling the bugs and creating new APIs.

1.5 Gantt Chart



GANTT CHART

Industrial Training Plan Report

PROJECT NAME

Wavelet Solutions Sdn Bhd

Company Name

03-Oct-22

START DATE

Task ID	Task Name	Task Name	End Date	Duration (In Days)	10/3/2022	10/10/2022	10/17/2022	10/24/2022	11/1/2022	11/8/2022	11/15/2022	11/22/2022	11/29/2022	12/5/2022	12/12/2022	12/19/2022	12/26/2022	1/3/2023	1/9/2023	1/16/2023	1/23/2023	1/29/2023	2/5/2023	2/15/2023	2/28/2023
T01	INTRODUCTION	10/3/2022	10/4/2022																						
T02	Learning Jira	10/4/2022	10/5/2022	2																					
T03	Kanban Methodology	10/5/2022	10/7/2022	3																					
T04	Learning API and Implem	10/7/2022	10/31/2022	25																					
T05	BigLedger Product BackE	10/31/2022	11/30/2022	31																					
T06	Integration	11/30/2022	12/31/2022	32																					
T07	Learning Angular and Im	12/31/2022	1/31/2023	32																					
T08	Creating Applet full stack	1/31/2023	2/28/2023	29																					

Figure 4: Gantt Chart

1.6 Conclusion

This chapter provides background information on the company's history, organisational structure, and department where 20 weeks of industrial training were conducted. Additionally, a brief discussion of the practical training programme flow was included in this chapter.

CHAPTER 2

SPECIFIC DETAILS ON PROJECT / TRAINING

2.1 Introduction

This chapter delves deeper into the projects and instruction that were provided during the 20-week industrial training program. It includes a detailed breakdown of the procedures that were followed to complete the primary project, as well as any additional side tasks that were assigned. The chapter provides a step-by-step guide to the project, including the tools and techniques used, and the challenges that were encountered. Additionally, it covers the instruction provided and how it helped the trainee to better understand the project, and how the training helped the trainee to develop their skills. The main goal of this chapter is to provide a comprehensive overview of the projects and instruction that were provided during the training program, and how they contributed to the trainee's professional development.

The company specializes in providing ERP solutions for small and medium-sized enterprises (SMEs). It is involved in the development, implementation, and marketing of a web-based and cloud-based ERP system known as the Enterprise Management Portal (EMP). Since 2019, the company has been working on the next generation product, called BigLedger. This project is based on multi-channel cloud-native architecture, with features such as scalability, cross-platform compatibility, mobile functionality, and REST-API. The BigLedger project includes many small applications, known as applets, and the company continues to develop new applets to expand its capabilities. The company's expertise in providing tailored ERP solutions for SMEs, with the latest technology trends like cloud, mobile and API, makes it a reliable and efficient solution provider.

2.2 Objectives of Project / Training

Objective of this project are:

- a) To revolutionize the productivity and efficiency of the business world by combining the value and benefits of cloud-native ERP platform & AI technologies.

- b) Empower every business to be run on a cloud native platform that will seamlessly orchestrate business operations & decision making with software agents.
- c) To develop applets that is easy to understand and be used by users of from all ages.

2.3 Requirement Engineering

The company CEO, Product team, Backend team lead and frontend team lead discuss with the clients and then the product team and frontend team create mock-ups which they attach inside Jiraa issues. For more clarification we need to discuss with the CEO, Team Lead or with the Reporter. Figure 5 below shows the mock-up created by the product team.

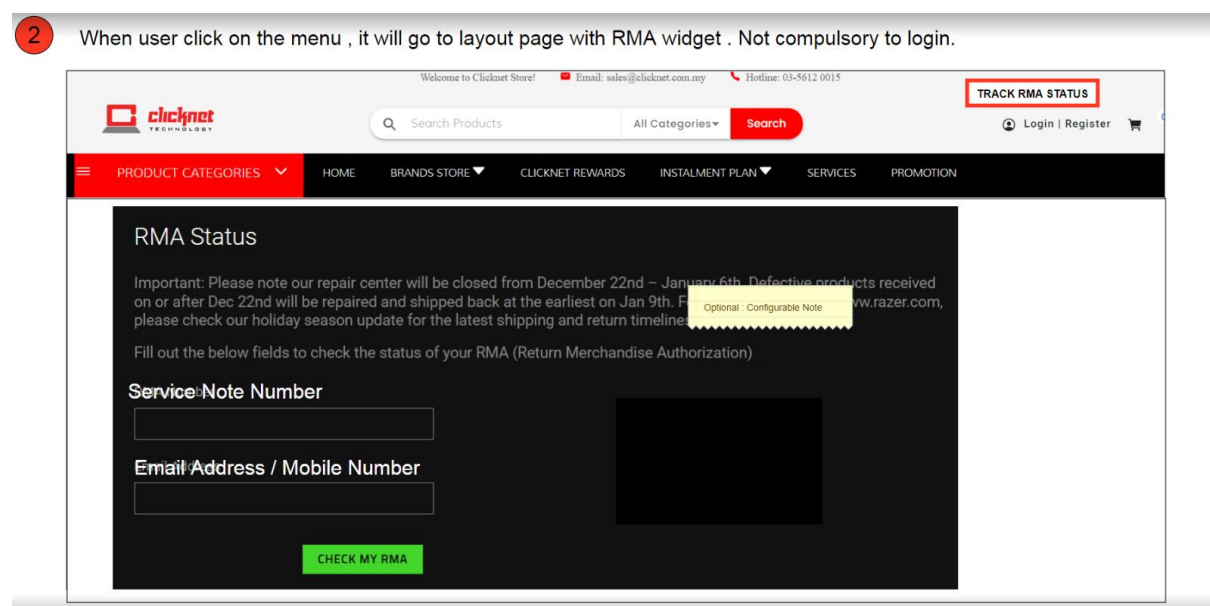


Figure 5: Mock-up Created by the Product/Frontend team

2.4 Creating Applets

Currently, this project is using Java programming language to write the code in IntelliJ Community with Spring Boot framework. Basically, we create Applets which is a Java application that may be included in a web page is called an applet. It functions client-side and operates inside the web browser. The APPLET or OBJECT element is used to embed an applet into an HTML page, which is then stored on a web server. The website is made more dynamic and engaging using applets.

One of the top backend frameworks that programmers use for backend web development is Spring Boot. It is a Spring-based framework that enables programmers to create backend web

applications of the highest quality in Java. So we used Spring boot framework which helps in the development of platform-agnostic apps that can operate locally on a device without the need for an internet connection or other installed services.

As this company provide various kind of system, there are plenty of different project I had work experience. For example, Stock Replenishment Applet, Internal Sales Order Applets, Customer Applet, Internal Purchase Invoice applet, Internal Purchase return. Voucher Management applet etc as well as some commercial website like senheng, OneLiving and Clicknet.

2.4.1 Project Execution

So our company works as top-down management system. For new applets or enhancing any existing applets, first our CEO and vice president decides. Figure 6 Below shows the flow on the project execution.

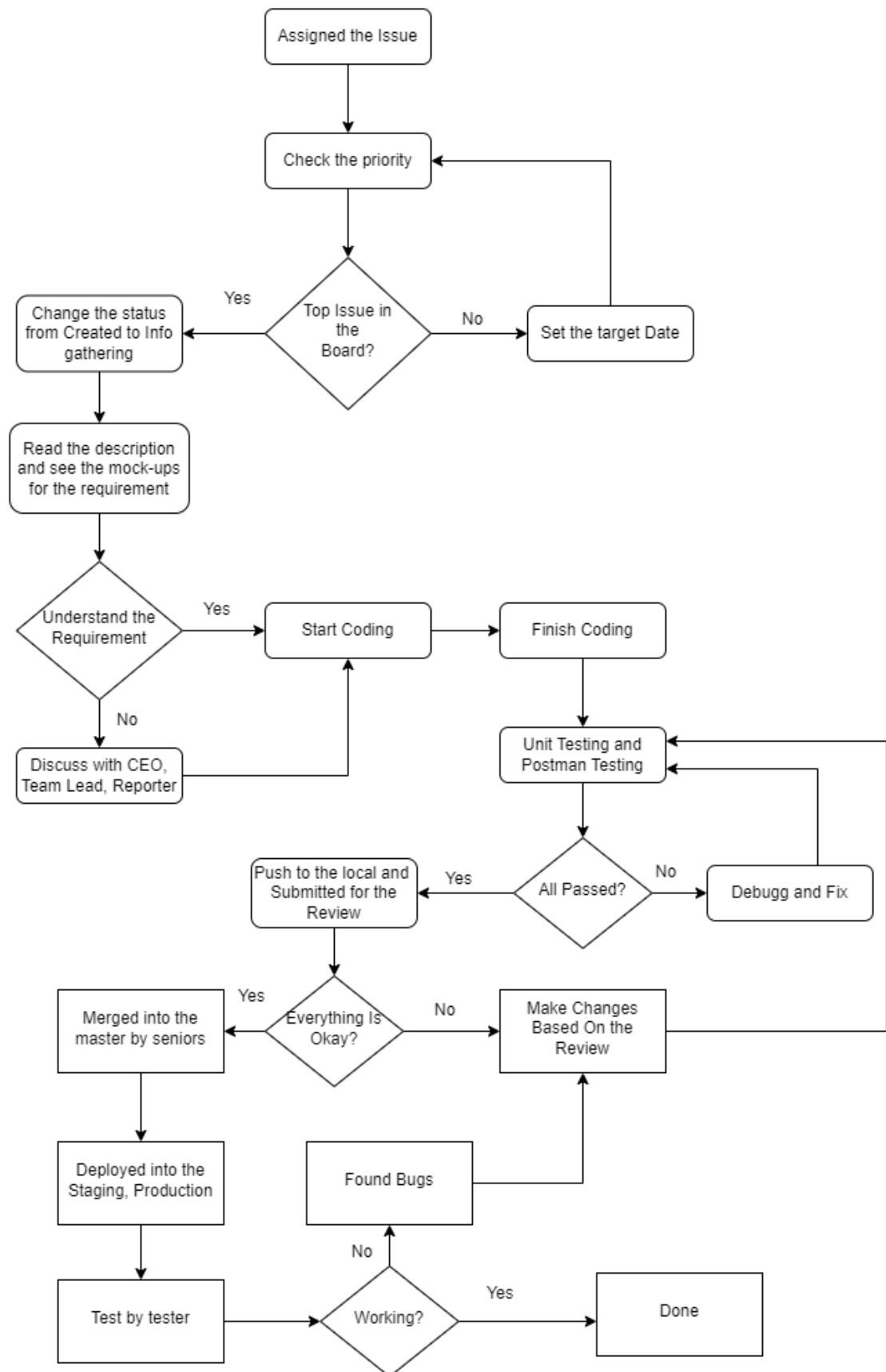


Figure 6: Flowchart of the project execution

2.4.1.1 Jira (Kanban)

My team leader and supervisor Asmaa Ammar created every issues in jira Kanban. After that She assigned to me some specific task. Before start working on the issue, they organise a meeting with the task assignee and as well with the top level management to clarify everything.

while I gather the information I change the jira issue status into “info-gathering” / “Analysis – Investigation” and set the target end date after getting every information, I need to change the issue status into “In-progress”. Actually, we change the status into “In-progress” while coding.

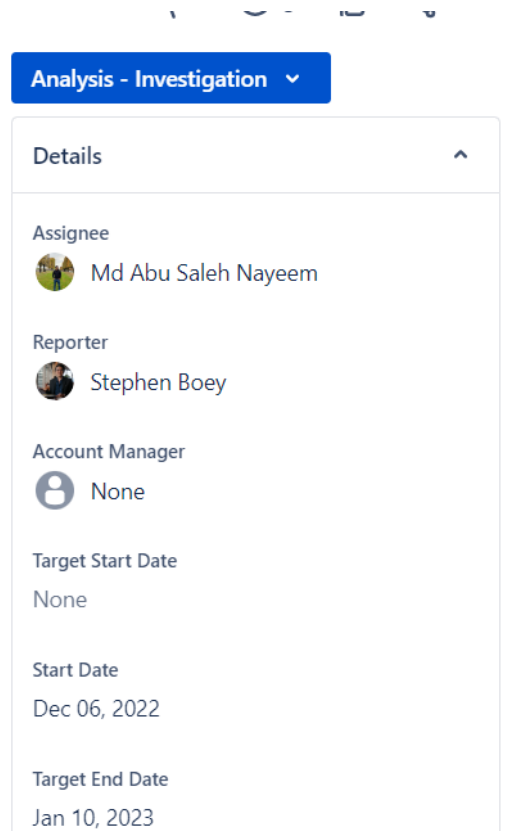


Figure 7: Issue Status “Analysis-Investigation” and “target end date”

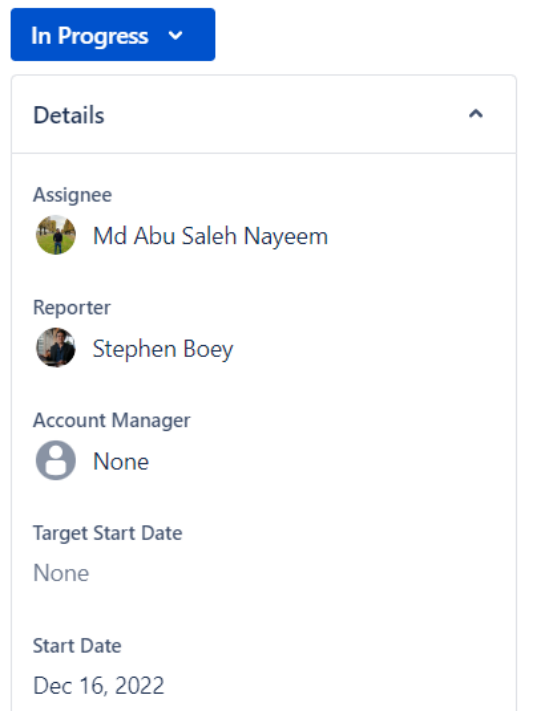


Figure 8: Issue Status “In Progress”

After finishing my code, I test in the Postman first and then test by unit testing. Successfully passing every test, I pushed the code into my local and submit the code into “Code Review” which usually reviewed by the seniors whom I assign (Figure 6). They comment if they find any problem so that I change the code, test and push again until it merges into the master.

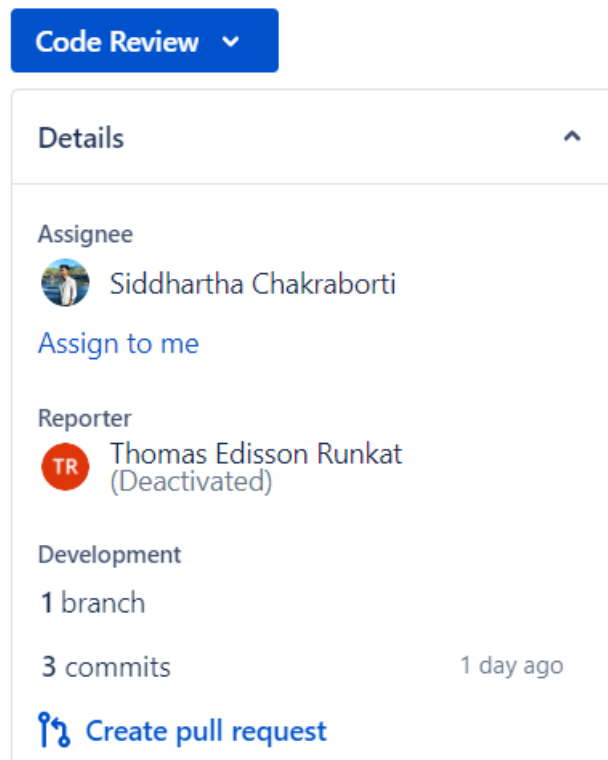


Figure 9: Issue Status “Code Review” and the “Commits”

When the code merged into the master, the bitbucket (a Git-based source code repository hosting service) runs all the test from master branch and if it gets error from my any of code I immediately need to fix them as every night our seniors deploy the code into the cloud.

#6229	BLPR-39250 - Fix compile error Siddhartha Chakraborti d13d06a development	Successful	4 hours ago	23m 10s
#6228	BLPR-38616 Nayeem Change mapping for processor stock inven... Siddhartha Chakraborti b3d34bf development	Failed	4 hours ago	4m 14s
#6227	BLPR-39250: Added Query User Data Implementation for SC Int... Siddhartha Chakraborti ac60fc development	Failed	5 hours ago	3m 35s
#6226	BLPR-39249: Added User Addition Implementation for SC Siddhartha Chakraborti 69d0e09 development	Failed	5 hours ago	4m 0s
#6225	BLPR-39251: Added Update User Implementation for SC Integrat... Siddhartha Chakraborti df5681e development	Failed	5 hours ago	4m 1s
#6224	BLPR-35464: Added Get Account Information Implementation f... Siddhartha Chakraborti 61f9407 development	Failed	5 hours ago	4m 3s
#6223	BLPR-35462: Added Verify Document Implementation for SC Siddhartha Chakraborti ca35e4b development	Failed	5 hours ago	4m 6s
#6222	BLPR-35461: Added Company Image Endpoint Implementation f... Siddhartha Chakraborti e41c27f development	Successful	5 hours ago	17m 23s

Figure 10: Bitbucket “Successful / failed” test.

2.4.1.2 IntelliJ Idea

I use IntelliJ for coding in java programming language. Before coding first I create a local branch using the issue code number (figure 8), so that it can show commits inside issue.

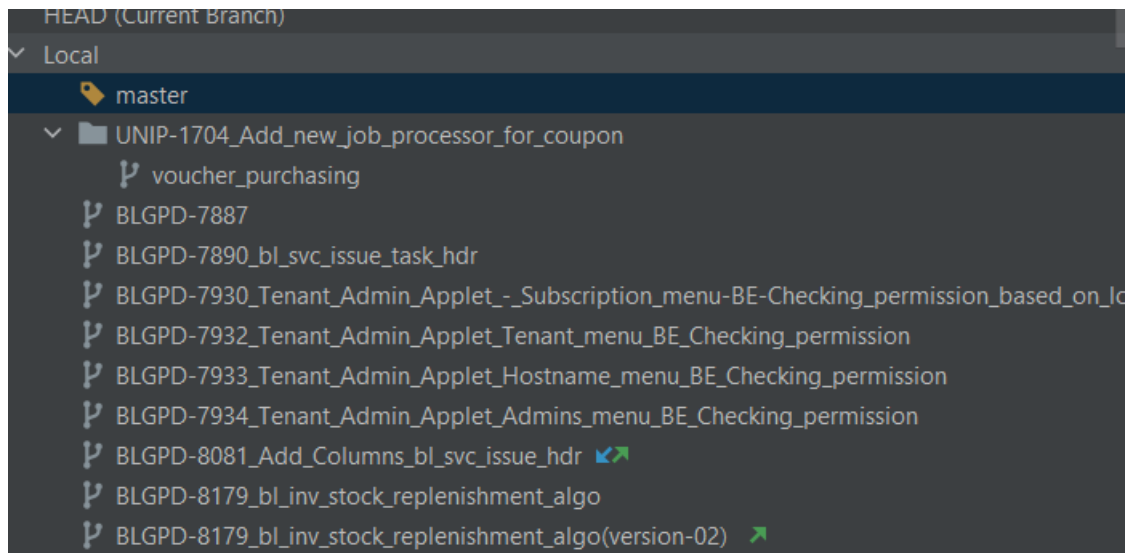


Figure 11: local branch.

To test locally, I set up a local environment (Figure 9) so that I can send the request from postman and then I run the environment.

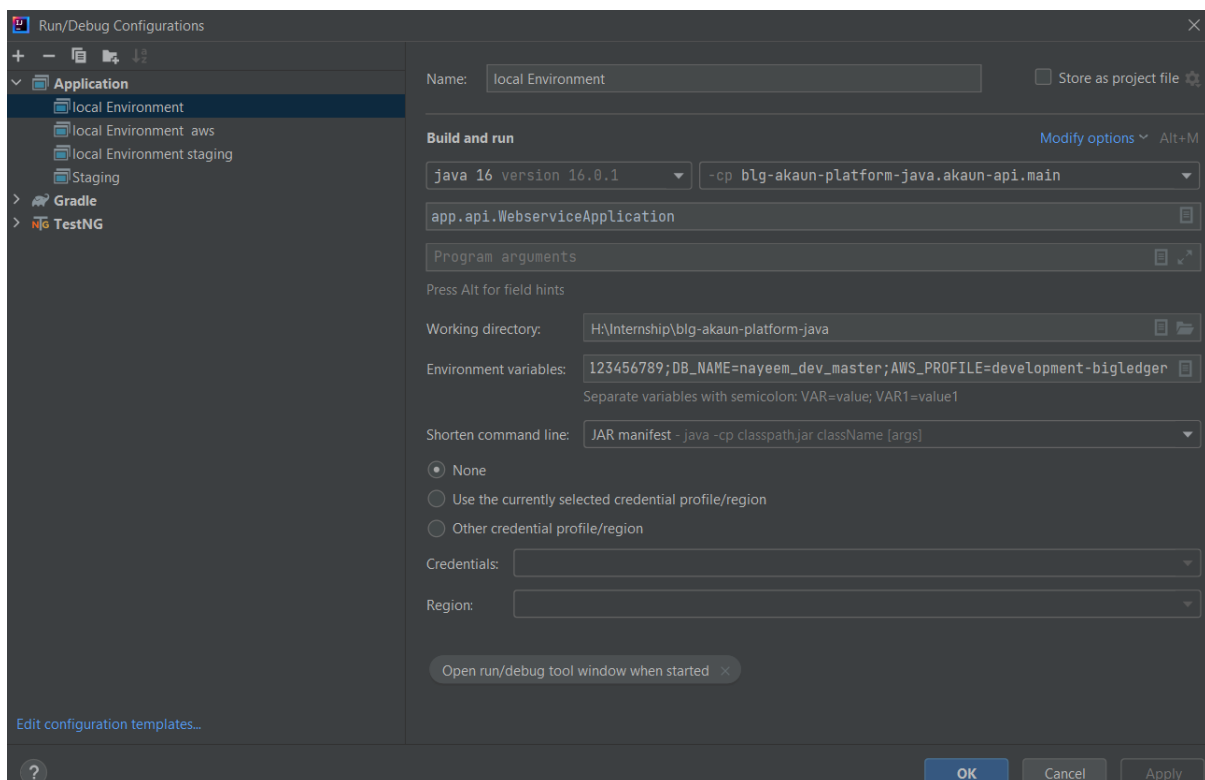


Figure 12: local Environment.

In figure 10 below shows that the configuration for the unit testing which is a controller class.

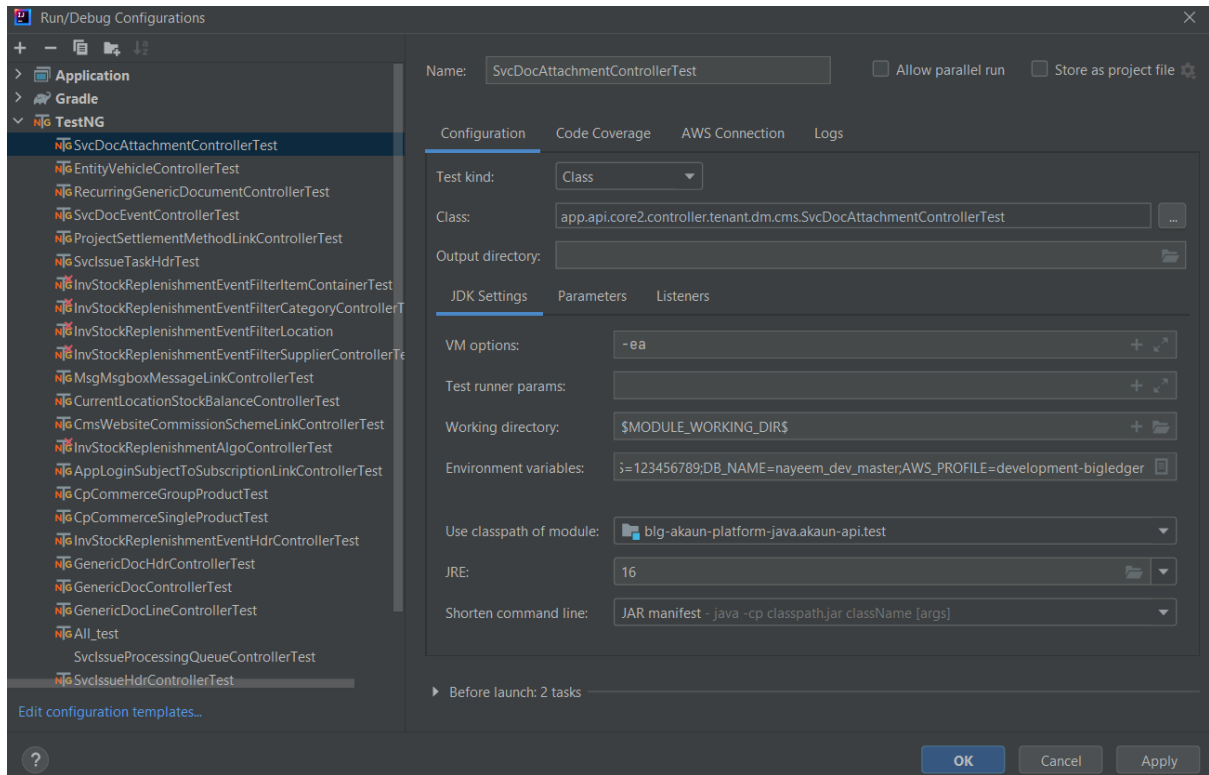


Figure 13: Unit Testing Configuration.

2.4.1.3 DBeaver

We use DBeaver for database management which is a tool and a SQL client software programme. It employs a JDBC driver to communicate with relational databases by using the JDBC application programming interface.

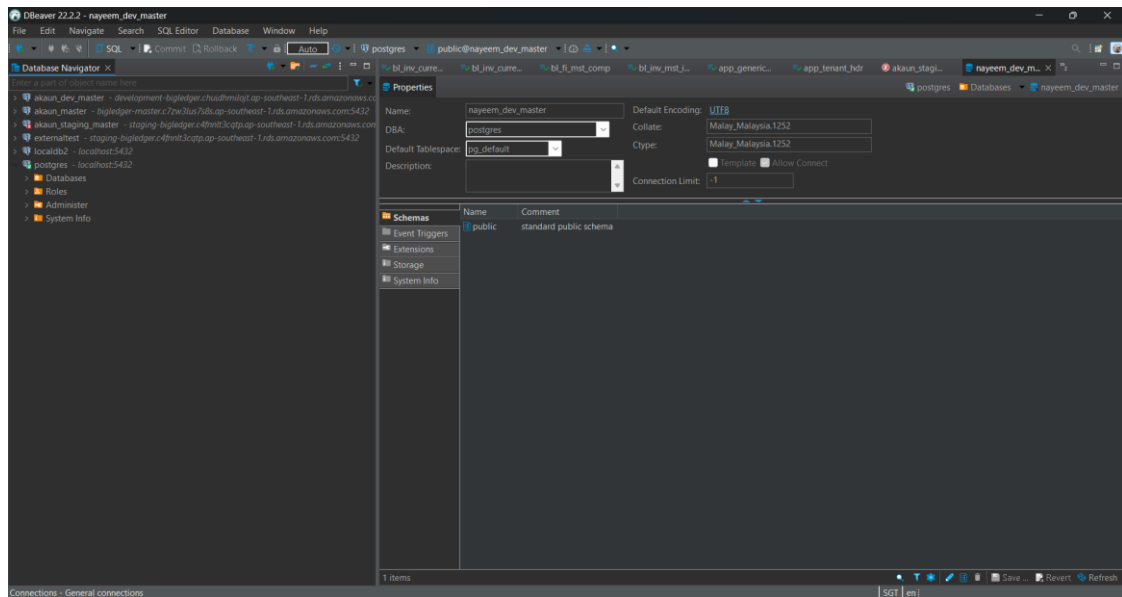


Figure 14: DBeaver.

2.4.1.4 PostgreSQL

We use PostgreSQL which is powerful, PostgreSQL object-relational database system combines the SQL language with a number of capabilities to reliably store and scale even the most difficult data workloads.

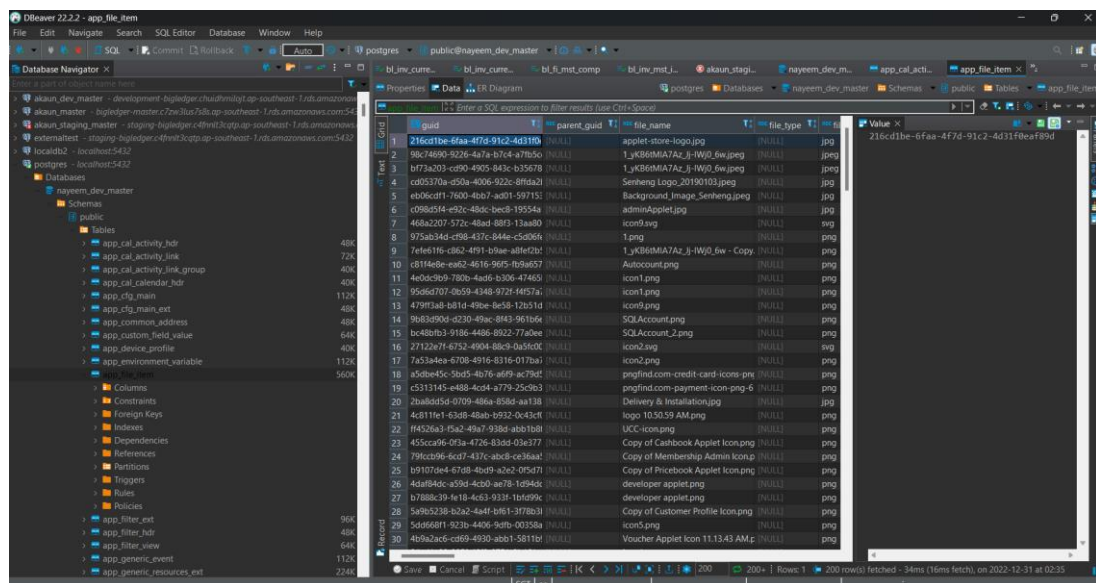


Figure 15: PostgreSQL.

2.4.1.5 Postman

As I mentioned earlier, I need to use postman which is an API testing tool. It is an HTTP client that examines HTTP requests using a graphical user interface, allowing us to get various results that must then be verified. I usually send request for every endpoint of the controller. Such as, Create, Update, Delete, getByGuid, getAll and getByCriteria etc.

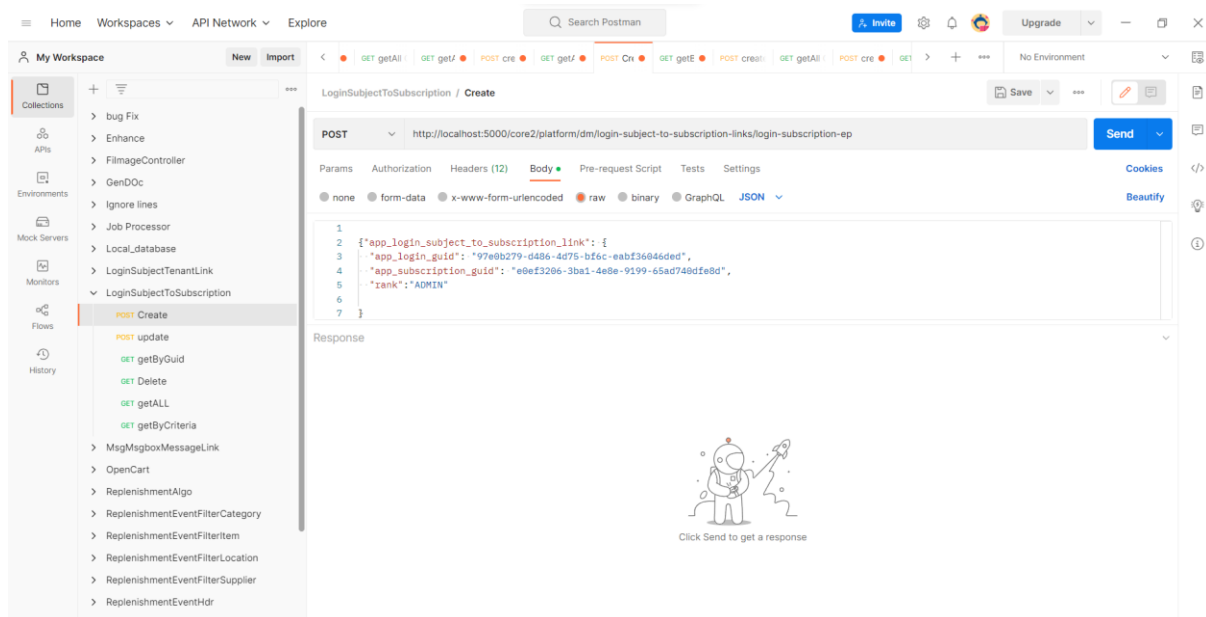


Figure 16: Postman.

2.4.1.6 Chrome Browser

After completing the applets and deploying in the cloud successfully. I need to check the applets by running it, if it gives any bugs.

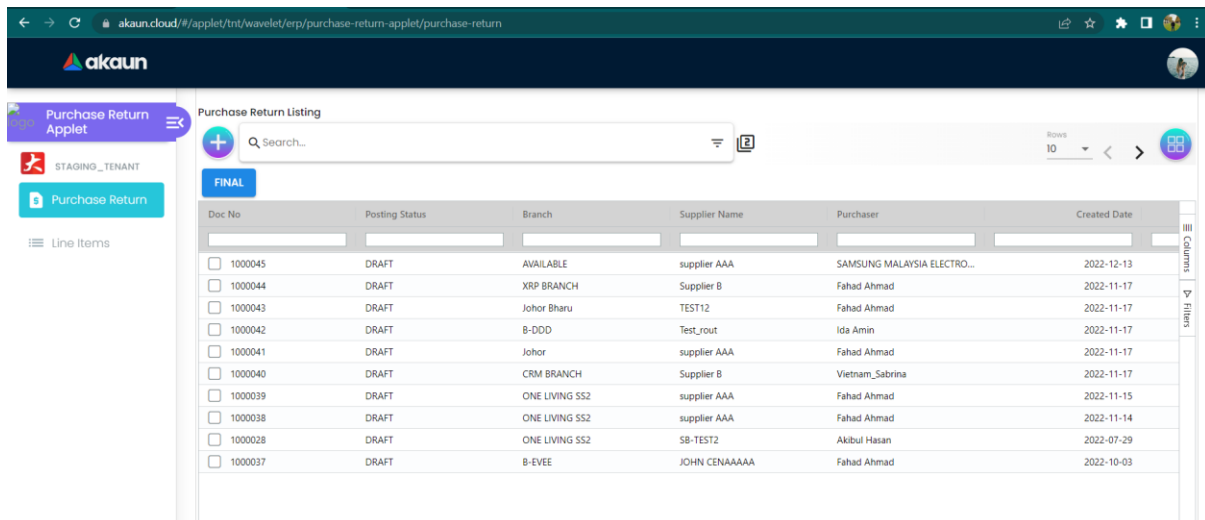


Figure 17: Applet in Cloud.

2.4.2 Hardware Requirement for execution

Requirement	Minimum	Recommended
RAM	2.5GB of Free RAM	8 GB of total system RAM
CPU	Any modern CPU	Multi-core CPU
Disk space	2.5 GB and another 1 GB for caches	SSD drive with at least 5 GB of free space
JDK (Java Development Kit)	version 8	Version 16
Operating system	Officially released 64-bit versions of the following: Microsoft Windows 8 or later macOS 10.14 or later Any Linux distribution that supports Gnome, KDE , or Unity DE.	Latest 64-bit version of Windows, macOS, or Linux (for example, Debian, Ubuntu, or RHEL)

2.5 Stoplight: API Design and Documentation

For Companies stakeholders, we need to create API documentation which can be Integration by others company. We use the Stoplight to document and design as it is a powerful and user-friendly API design platform that helps teams to collaborate and streamline their API development process. It integrates seamlessly into existing workflows and enables all stakeholders, including developers, designers, and business teams, to work together more efficiently. With Stoplight, we can easily design, document, and test their APIs, ensuring that they meet industry standards and are ready for production. The platform also offers a wide range of features, such as versioning, code generation, and real-time collaboration, to help teams stay organized and on track throughout the API development process. Overall, Stoplight is an essential tool for any organization looking to build and maintain high-quality APIs in a collaborative and efficient manner.

The figure below shows the Endpoint of Delivery where we can get all the data by this endpoint.

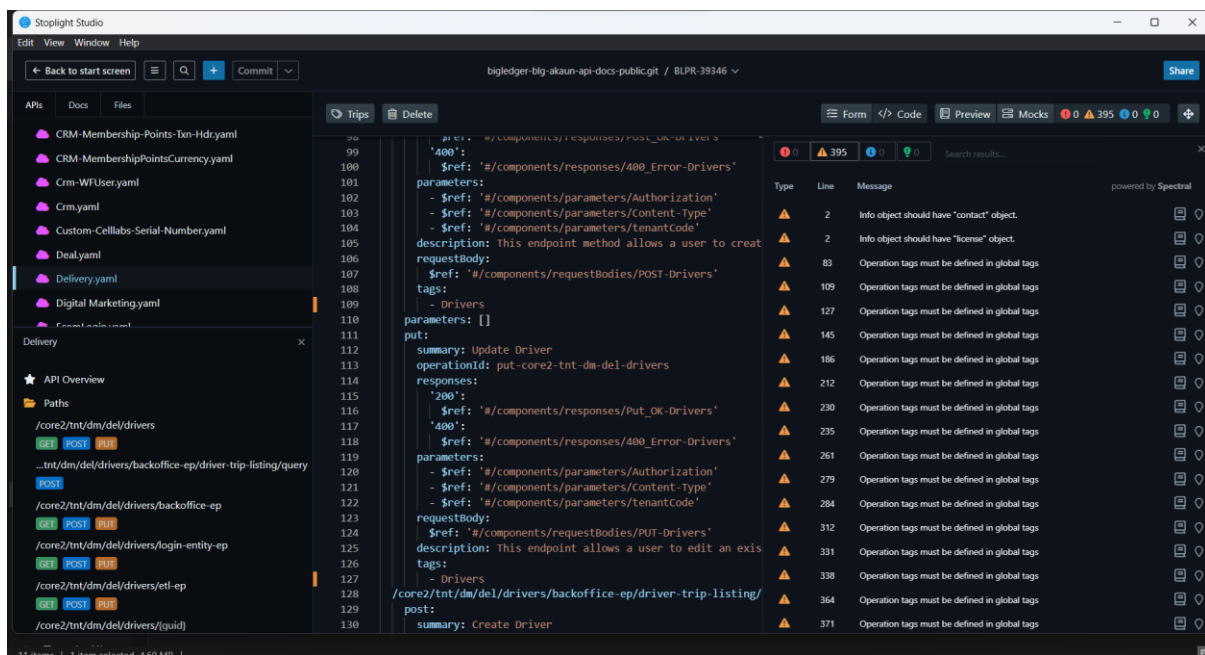


Figure 18: Stoplight: API Design and Documentation

2.6 Other Project tasks

I have given some other task to make documentation of the applets, developer guides etc. in our own website in playbook.com. So for this we usually code in the visual Studio (figure 15) and then deploy in the play book.

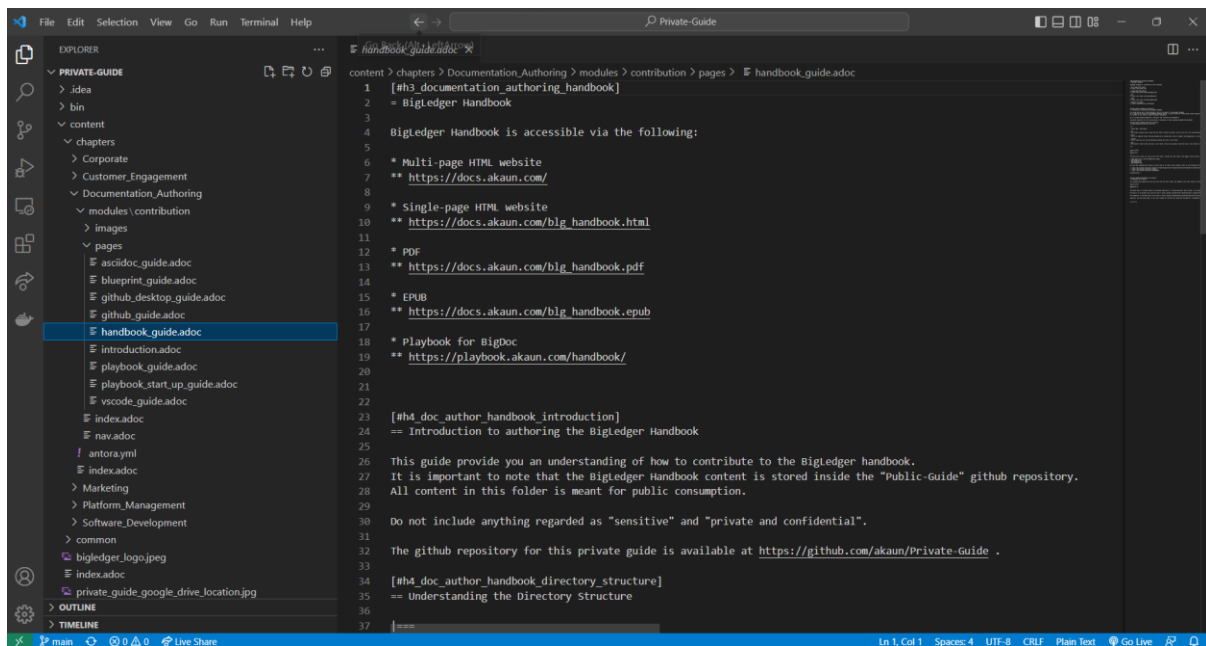


Figure 19: Code for Documentation

2.7 Time period to complete the tasks

It is difficult to determine a specific time period for completing tasks as they can vary based on the task itself and its level of urgency and difficulties. There are 17 different types of issues (figure 15), each of which is assigned a level of urgency based on factors such as whether it is a blocker or a bug. Issues that are classified as blockers or bugs are given high priority and need to be resolved as soon as possible. Typically, all issues have a start date and a due date (figure 16), which is set by the person who reported the issue and the target end date is set by the programmer. The start date and due date help to keep track of the progress of the task and ensure that it is completed within a reasonable timeframe.

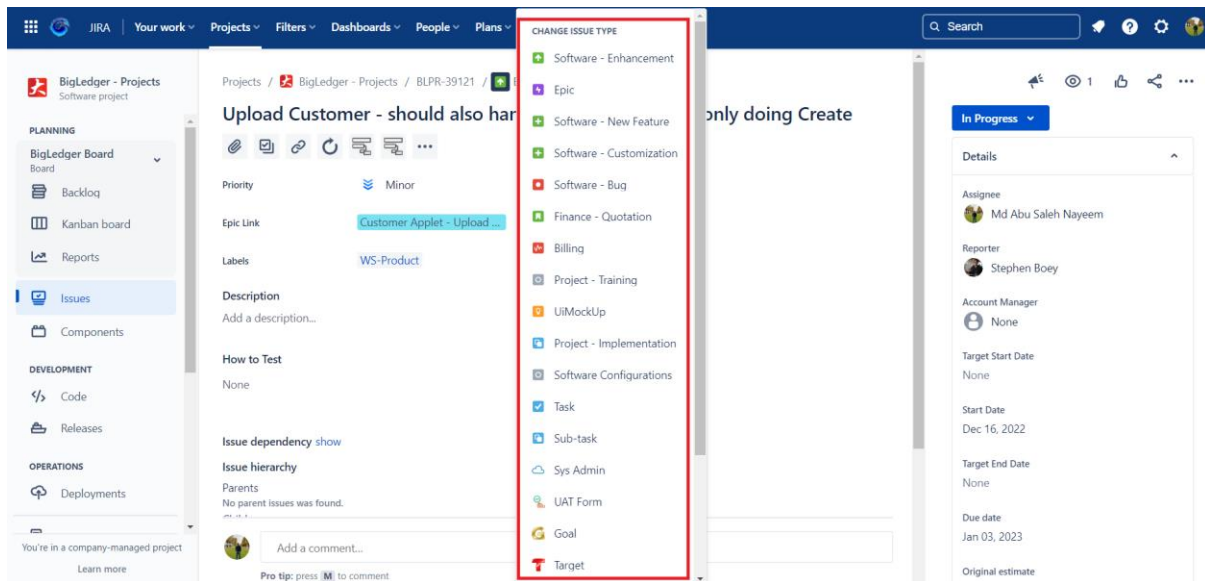


Figure 20 Types of issue

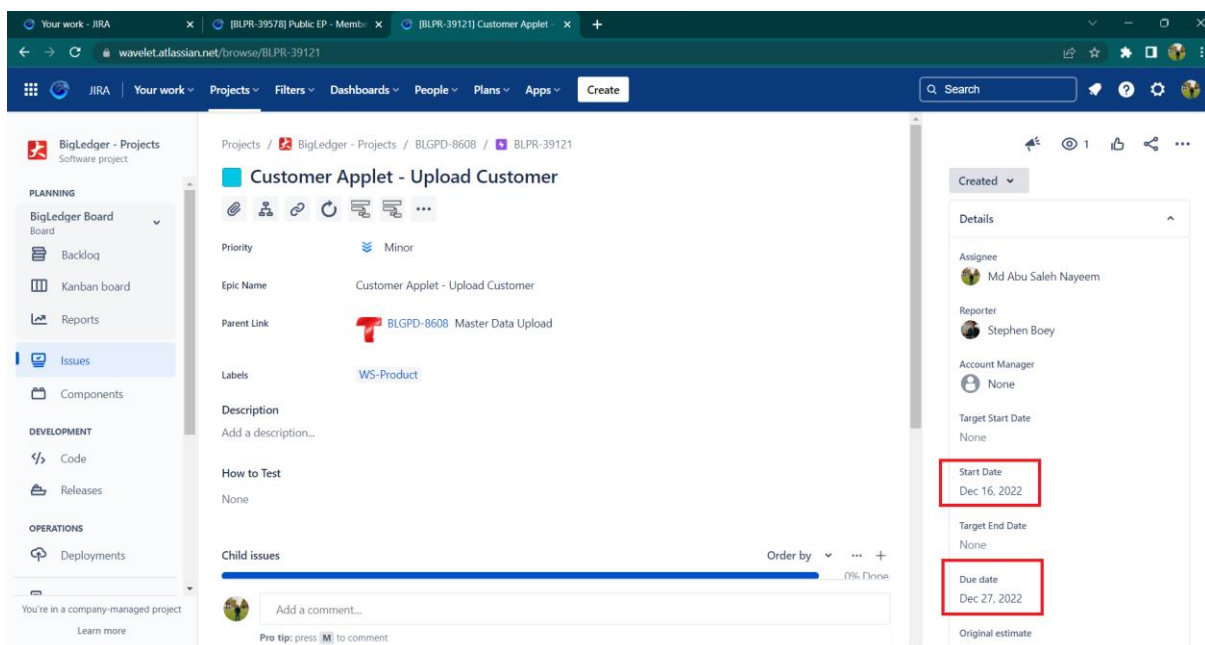


Figure 21: Start Date, Due Date and Target End Date

2.8 Theoretical and Practical Knowledge

During my internship, the theoretical and practical knowledge from Computer Science and Information Technology played a crucial role in completing the tasks assigned to me. As a pure back-end developer, I primarily used the Java programming language which I

learned in the course named Object-Oriented Programming. Additionally, I also needed to implement data structure algorithms to create processors. Furthermore, database and SQL query were highly needed to complete the majority of the tasks, which I also learned from the Database course, as well as other related courses. Overall, my knowledge and skills in computer science and information technology were essential in completing the tasks and achieving success in my internship.

2.9 Problem Faced During Practical

During practical work, various problems I faced. Some of the common problems faced during practical work include:

- Lack of proper understanding of the task or project: This led to confusion and difficulty in completing the task.
- Difficulty in finding and using the right tools and resources: Not having access to the right tools or resources can make it difficult to complete a task. For example, sometimes I could not test my processor as it needed AWS access.
- Difficulty in troubleshooting and debugging: Identifying and resolving errors in the code is challenging. The error fixing sometimes takes more time. The error code I usually get, 400 bad request error, 417 Expectation error etc.
- Time constraints: Having limited time to complete a task made difficult to complete it to the best of one's ability.
- Limited knowledge or experience: Not having enough knowledge or experience in a particular area like the processor and how it's worked made it difficult to complete a task.
- Technical issues with the equipment or software: Technical issues with the equipment or software can cause delays and difficulties in completing the task which I faced while using postgresQL.

I became aware of these problems and achieved problem-solving skills and knowledge to overcome these obstacles.

2.10 Program Management

The Company created a telegram group for me specially for the orientation. After that we have companies other common telegram groups to see the commits as they set the telegram bots to see in real time what is happening. In addition, whenever we start working on new applets the company and the clients prefers a new telegram groups to see the updates.

2.11 Conclusion

In conclusion, the internship experience provided an opportunity to apply both theoretical and practical knowledge from computer science and information technology. As a pure back-end developer, the main language used was Java, and the use of data structure algorithms and databases were also required. Time management was crucial to ensure the smooth development of the project, and the ability to overcome problems and challenges was an important skill developed. Overall, the internship provided valuable hands-on experience and a chance to develop problem-solving skills that will be useful in the future in the real-world industry.

CHAPTER 3

OVERALL INFORMATION OF INDUSTRIAL TRAINING

3.1 Introduction

The chapter discussed the skills that were obtained and improved throughout the internship program. It highlighted that the tasks given by the company's supervisor and reporter allowed the student to develop a wide range of skills such as technical skills in programming languages, data structure algorithms and databases, time management, problem-solving, communication and collaboration, adaptability, attention to detail, creativity and innovation. These skills were obtained through hands-on experience and will be valuable for the student in future career.

3.2 Skills Improvement and Learning

The skills obtained and improved throughout the internship program were diverse and varied. Some of the key skills that were developed include:

- **Technical skills:** such as programming languages, data structure algorithms, databases, and debugging techniques. Before Internship I would know the basics and intermediate level of programming but now I came to know plenty of things related to Frameworks.
- **Time management:** the ability to manage time effectively and efficiently in order to complete tasks and meet deadlines. The Clients never know the difficulties, so they always pushed to complete tasks which taught me about the time management.
- **Problem-solving:** Yes, the ability to identify and resolve problems and challenges that arose during the development process is an important skill. This skill involves being able to analyse the situation, identify the root cause of the problem, and then develop and implement a solution. It also involves being able to adapt to new situations and find alternative solutions when faced with obstacles. This skill is crucial for ensuring that the project runs smoothly and is completed on time and to the best of one's ability. Additionally, this skill also involves being able to troubleshoot and debug any errors that may arise during the development process.

Being able to identify and resolve problems and challenges effectively is a key skill that is highly valued in the industry and will be useful in any future career.

- **Communication and collaboration:** the ability to work effectively with others and communicate ideas and progress effectively. I believe that communication is an important skill in problem-solving. When faced with a problem, it is essential to ask the right person for help and advice. This can be the supervisor, a colleague or a mentor, who can provide valuable guidance and support. Clear and effective communication can help to identify the root cause of the problem and find an appropriate solution. Additionally, Communication skills help to avoid the unnecessary replication of work, and also helps to share knowledge and collaborate with others to achieve common goals. In a nutshell, good communication can save time and effort, and lead to better problem-solving and decision-making.
- **Adaptability and resourcefulness:** Yes, being able to adapt to new situations and find alternative solutions when faced with obstacles is an important skill. This skill involves being able to think on your feet and come up with solutions to unexpected problems or challenges. It also involves being resourceful and able to find new ways to accomplish a task or achieve a goal when the usual methods are not feasible. Being adaptable is essential in any field, as it allows you to handle unexpected situations and find solutions to problems that may arise.
In the development field, this skill is particularly important as it allows me to find new solutions to problems that may arise during the development process, and to keep the project moving forward even when faced with obstacles. This ability helps to ensure that the project runs smoothly and is completed on time and to the best of one's ability.
- **Attention to detail:** the ability to pay close attention to detail and ensure the quality of the final product.
- **Creativity and innovation:** the ability to think outside of the box and come up with new and innovative solutions to problems.

Overall, the internship provided an opportunity to develop and improve a wide range of skills that will be valuable in future career.

3.3 Reference Materials

During the internship program, reference materials were used to aid in the completion of tasks and to help solve problems. One important source of reference materials was the playbook documentation provided by the company. This documentation provides step-by-step instructions and tips and tricks for coding, making it a useful resource for solving problems and completing tasks more efficiently. Additionally, trainees were also able to refer to online resources and source code to find solutions to problems or to learn new techniques.

Using reference materials was an important aspect of the internship as it helped to ensure that tasks were completed efficiently and effectively. The use of these materials helped the trainee to solve problems faster and to improve their skills and knowledge. It was an excellent opportunity for the trainee to learn from the experience of others and to apply those learnings to their work.

3.4 Constructive Comments

The company where the internship was held was well-managed and had a fair division of tasks among the internship students. The company had a heavy workload, which provided opportunities for the intern to work on various fields, therefore, it helped the intern to have a broad range of experience. The management team was approachable and always willing to help with any problems or queries. Overall, the intern had a positive experience with the company and had no issues or problems to comment on. The company provided an excellent working environment that was conducive to learning and growth, and the intern felt valued and supported throughout the internship program.

3.5 Conclusion

In conclusion, the internship program with this company has provided valuable learning experiences. The intern was able to acquire a wide range of skills such as technical skills in programming languages, data structure algorithms and databases, time management, problem-solving, communication and collaboration, adaptability, attention to detail, creativity and innovation. These skills were obtained through hands-on experience and will be valuable for the intern in future career. The heavy workload and various field of experience that the company provided, helped the intern to be prepared both physically and mentally to become a good employee in the real-world industry. The intern had a positive experience with the

company and felt that the skills and knowledge gained during the internship program have prepared them well for a future career in the industry.

CHAPTER 4

CONCLUSION

4.1 Introduction

This chapter will focus on the overall achievements, problems, and executions encountered during the internship period of the industrial training program at Wavelet Solutions Sdn Bhd. It will also include the student's personal opinion and suggestions on their experience, including any areas for improvement or areas where the company excelled. The information presented in this chapter will provide valuable insight into the internship experience, highlighting areas of success and areas for potential improvement, and will serve as a useful tool for both the company and the student to evaluate the effectiveness of the industrial training program.

4.2 Overall Achievements

The internship period of the industrial training program at Wavelet Solutions Sdn Bhd was a valuable experience for me. During the 20 weeks of internship, I was able to improve my skills and gain hands-on working experience in a real-world setting. I also obtained new knowledge by working on practical tasks and activities, such as projects based on the MVC (Model, View, and Controller) software architectural pattern, using Spring Boot framework and the Java functional language. In addition, I gained experience in creating Restful APIs, creating processors and working with ETL (Extract, Transform, and Load) process which is essential in data warehousing and analytics.

I also learned how to extract data from the company's previous system (EMP), transform it to fit the format and structure of the new BigLedger and load it into the current data warehouse for further analysis. The knowledge of business requirements, data structures,

and relationships, and solid knowledge of Java were essential for performing the data integration and transformation tasks. Overall, the industrial training program provided me with a great opportunity to learn new things and improve my skills.

4.3 Problems and Executions

During my industrial training, I found the experience to be very interesting. I didn't encounter any major errors during the development of my projects, and I did not have any significant issues with the software and hardware that I used. However, I did feel that there were times when I had a lot of work, as I was assigned many issues from different projects, which meant that I had to work long hours. But on the positive side, this gave me the opportunity to learn different things. Another problem I faced was that sometimes the production team would assign emergency issues that they didn't know how to solve and they would not provide proper descriptions of the problem, so I had to try to figure out the problem by myself.

In conclusion, my industrial training was a valuable experience and I learned a lot. However, it also highlighted the importance of being well-prepared with knowledge and skills before entering the industrial world in the future.

4.4 Opinion and Suggestions

In my opinion, there are a few ways that the training program could be improved in the future.

- Provide more detailed and accurate information about the projects and tasks in advance: This would help students understand the scope of the work and prepare accordingly, leading to more efficient and effective work.
- Provide more training on the specific tools and technologies used in the company: This would help students become more proficient in using these tools and technologies, leading to better performance and productivity.

4.5 Conclusion

In conclusion, the industrial training program is extremely beneficial for university students as it allows them to gain valuable insights into the real-world industries and prepare themselves for future careers. The program not only teaches new knowledge and skills but also provides students with exposure to the diverse range of people and situations they may encounter in the future. Through the industrial training program, students are able to apply the theoretical concepts learned in the classroom to real-world situations and gain a deeper understanding of the industry. It also provides the opportunity for students to develop their soft skills such as communication, teamwork and problem-solving, which are essential to succeed in the industry. Overall, the industrial training program is a valuable experience that helps students to become more well-rounded, knowledgeable and prepared for their future careers.

REFERENCES

1. *Wavelet Solutions | #1 Cloud ERP Solution Provider*. (n.d.). Retrieved January 28, 2023, from <https://wavelet.net/>
2. *Jira | Issue & Project Tracking Software | Atlassian*. (n.d.). Retrieved January 28, 2023, from <https://www.atlassian.com/software/jira>
3. *Applets| Internal Applets | Atlassian*. (n.d.). Retrieved January 28, 2023, from <https://akaun.cloud/>
4. *Download | DBeaver Community*. (n.d.). Retrieved January 28, 2023, from <https://dbeaver.io/download/>
5. *PostgreSQL: The world's most advanced open source database*. (n.d.). Retrieved January 28, 2023, from <https://www.postgresql.org/>
6. *Postman API Platform*. (n.d.). Retrieved January 28, 2023, from <https://www.postman.com/product/what-is-postman/>
7. *Bitbucket | Git solution for teams using Jira*. (n.d.). Retrieved January 28, 2023, from <https://bitbucket.org/>
8. *Bitbucket | Git solution for teams using Jira*. (n.d.). Retrieved January 28, 2023, from <https://bitbucket.org/>

APPENDIX A

Industrial Training Achievements & Checklists



Sekretariat Latihan Industri
Sekolah Komputeran,
Universiti Teknologi Malaysia, 81310 SKUDAI, JOHOR
Fax: 07-5565044 Tel: 07-5532008

INDUSTRIAL TRAINING ACHIEVEMENTS

(This form must be filled by student and must be attached in the Industrial Training report)

Student's Name : Md Abu Saleh Nayeem

Organisation : Wavelet Solutions Sdn Bhd.

No.	Task (List all tasks have been completed)	Month of Task Achieved				
		Month 1	Month 2	Month 3	Month 4	Month 5
	Software installation & Setup	✓				
	Learning Jira	✓				
	Kanban Methodology	✓				
	Learning API and Implementation	✓				
	BigLedger Product BackEnd		✓			
	Integration / Stoplight Api Design			✓		
	ETL (Extract, Transform, and Load)				✓	
	Testing and debugging					✓

Deliverable/Training reflection (Outcomes that have been achieved)
- Spring Boot Framewrok - Restful APIs - Develop Applets - PostgreSql - ETL - Integration - Improve on Technical Skills, Time management, Problem Solving and Communication Skill

Student Signature: Nayeem

Date: 30/01/2023

Approval	
Organisation's Supervisor:  (Signature) Name: Asmaa Ammar Date: 30/01/2023	Faculty Supervisor : (Signature) Name: Date:

INDUSTRIAL TRAINING CHECKLISTS (PLACEMENT)

No.	Activities/Tasks	Tick (✓)	Endorse by and date
1.	Report Duty To The Organization Approved by faculty	✓	
2.	E-mail Report Duty Verification (BLI-1D) to faculty supervisor.	✓	06/10/2022
3.	Upload Report Duty Verification (BLI-1D) in e-learning for course code SCS*4114.	✓	
4.	Contact faculty supervisor to inform the job scope and organization information	✓	06/10/2022
5.	Fill in organization supervisor information survey in ITS	✓	09/12/2022
6.	<i>Update of Industrial Training site (address). Inform faculty supervisor and JKL, if any changes.</i>		
7.	Updating Industrial Training Logbook online – daily basis	✓	
8.	Ensure that organization supervisor able to login to ITS successfully (Organization supervisor get ITS userid and password).	✓	
9.	Faculty Supervisor Visit. Date:	✓	08/02/2023
10.	Industrial Training Presentation.	✓	05/02/2023
11.	Performance evaluation by organisation supervisor. Online or submission BLI-2B during supervisor visit.	✓	08/02/2023
12.	Submission of Industrial Training Logbook.	✓	05/02/2023
13.	Submission of Industrial Training Report with checklist and achievement form as Appendix.	✓	05/02/2023
14.	Fill in Industrial Training Performance Evaluation by student (BLI-1E) in ITS.	✓	05/02/2023
15.	End Industrial Training	✓	28/02/2023

Note:

1. *Italic activities are optional depending on student situation.*

IMPORTANT: This checklist must be put as attachment in the industrial training report.

APPENDIX B

Some of the projects

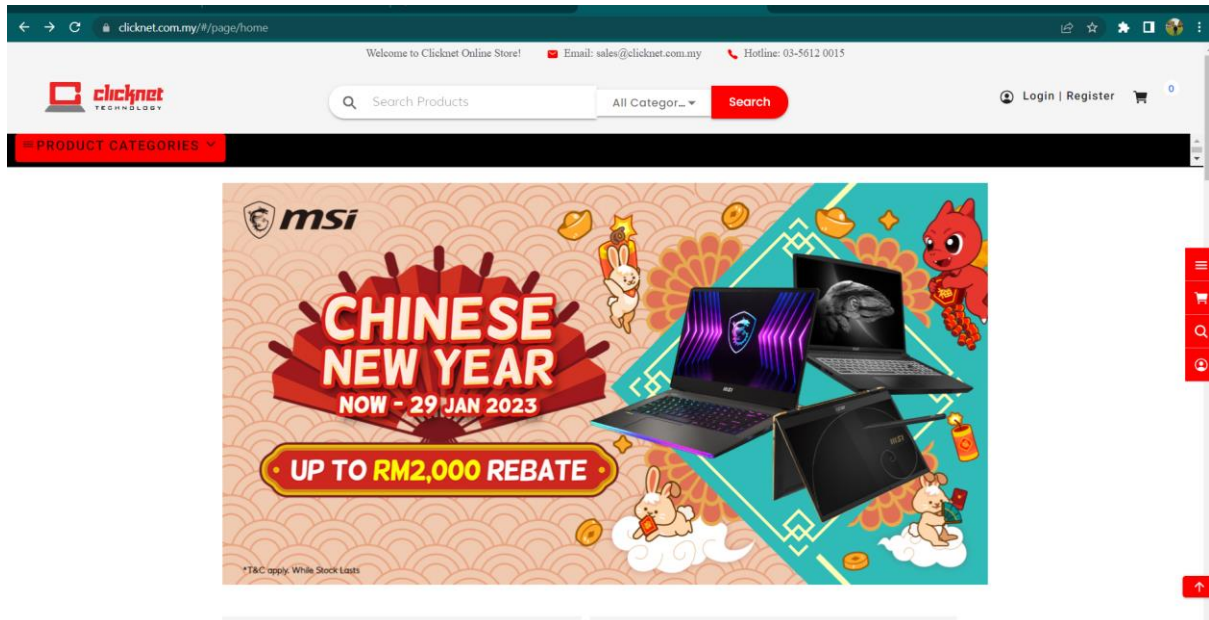


Figure 22: Clicknet website

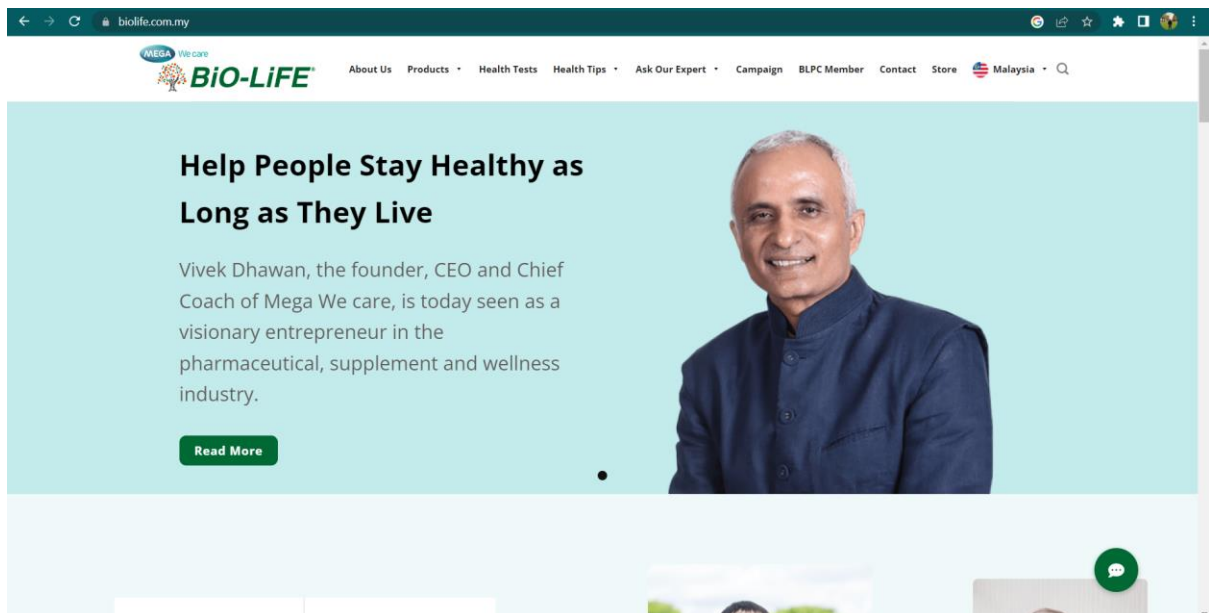


Figure 23: Biolife website

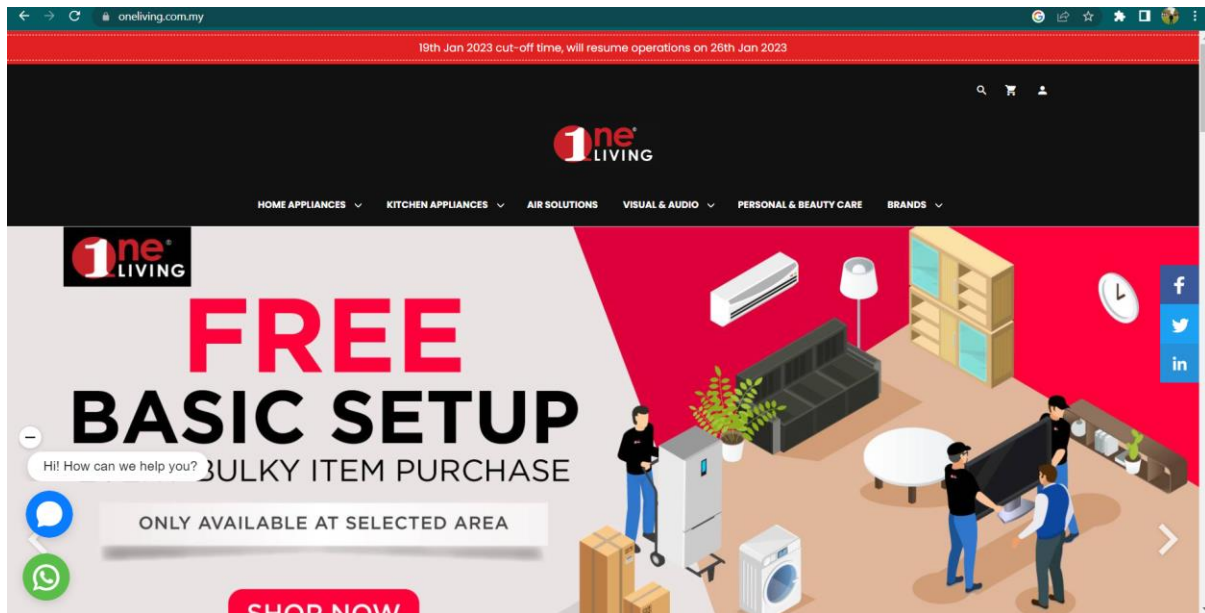


Figure 24: OneLiving website

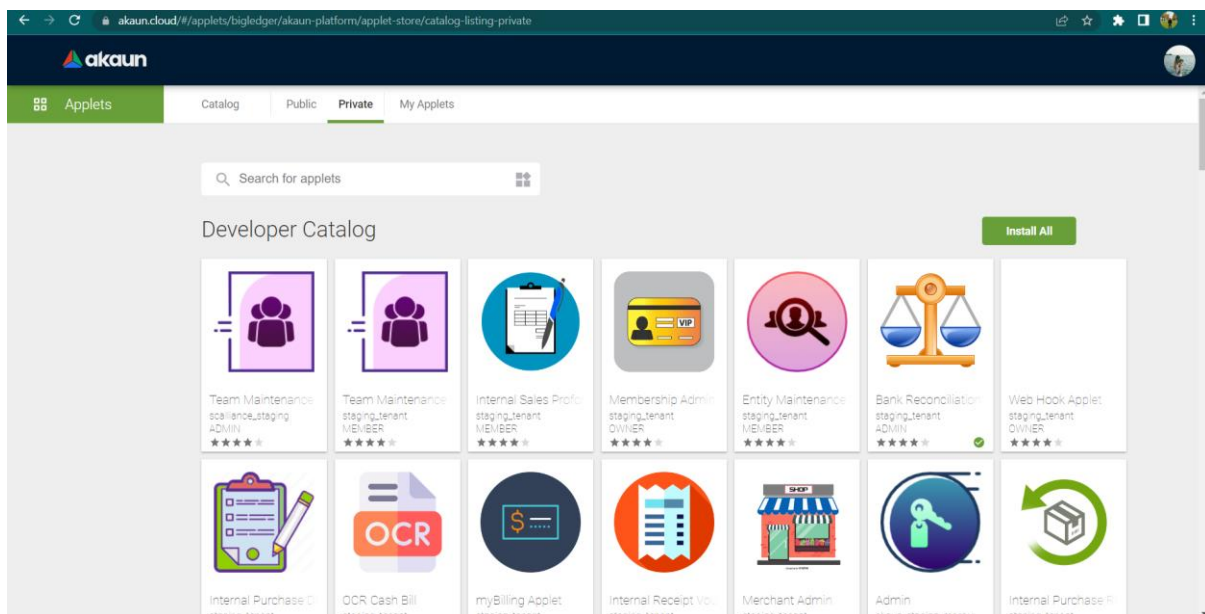


Figure 25: Applets